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to have a special value, and possibly to possess peculiar virtues, from its being discovered in such a place.

May 5*th.*

Vice President **Bridges** in the Chair.

Communications were received from Col. J. J. Abert, dated Washington, April 28, 1857, referring to a species of mocking-bird, supposed by him to be new; and from F. B. Meek and F. V. Hayden, M. D., entitled "Explorations under the War Department: Descriptions of new Cretaceous and Tertiary Fossils, collected by Dr. F. V. Hayden in Nebraska, under the direction of Lieut. G. K. Warren, U. S. Top. Engineers, with some remarks on the geology of the Upper Missouri country;" which were referred to Committees, as usual.

Mr. Lea stated that he proposed to change the name of Unio umbrosus and Unio Wheatleyi, to U. umbrans and U. Catawbensis, having inadvertently repeated these names in his papers of Feb. 17th and March 10th, 1857.

Mr. W. Parker Foulke requested permission to submit to the attention of the Academy some observations of the late Mr. Hugh Miller, printed in his recently published work, entitled "The Testimony of the Rocks."

It may be remembered, said Mr. F., that about three years ago I noticed at one of the stated meetings of the Academy, what appeared to me an interesting example of the fallacious use of a generalization—the inference from a term used in one sense, of what could follow from it only when used in another sense. From the fact that the carboniferous rocks lie within the series which geologists, for special reasons, group into one system which they call the "palæozoic," Mr. Miller had thought himself authorized so far to treat this system as a unity, as to consider it properly characterized as a whole, for the object of his argument, by the carboniferous member; and thence to infer that the palæozoic periods together constituted the Mosaic day during which the creation of vegetables took place. No influence had been allowed to the fact that distinctive types of *animal* organization had been the chief motives for the discrimination between the "palæozoic" and "secondary" rocks as two systems; but the distinction being thus adopted by others, the author had assigned one of the systems entire to the vegetable creation, and the other to that of reptiles.

You will remember, Mr. President that, before the time to which I refer, it was a subject of private remark amongst the members of the Academy, that a large portion of the zeal and talent employed in drawing conclusions from the generalizations of discoveries in natural science, was applied to premature inferences, or in disproportionate subordination to incomplete metaphysical inquiries. This evil was not confined to men of one pursuit, or of one school; but it affected every department of "natural science," and of the abstract sciences most nearly connected with it. In geology, as well as in ethnology, philology, and general natural history, we had frequent occasion to notice the conflict of unnecessary speculations, and of irrelevant or unseasonable inferences; and the temporary withdrawal of much mental activity from the legitimate paths of scientific inquiry. The interval is short since the investigations of our day were fairly opened; and already the necessary subdivisions of labor are so numerous as to demand the most sedulous devotion to each. Yet we saw laborer after laborer diverging from his road to engage upon one or another side of metaphysical controversies, which could not be finally determined except by methods proper to the natural sciences; nor even by these, unless after greater accumulation and more accurate generalization of facts than had been accomplished. In the eagerness excited by these controversies, we also noticed, especially in respect to such as were of a kind to attract popular attention, that there was caused a bias unfavorable to the ascertainment of fact; and that the legitimate uses of actual discovery were thwarted by irregular processes, which for the most part were unconsciously adopted, but which were not for this reason the less pernicious to the progress of natural knowledge. In these circumstances, the rationale of the methods employed by writers upon natural history or the physical sciences in general, became a peculiarly important subject for the scrutiny of the Academy; and in formally presenting that subject, I felt assured that my propositions would serve only as the means of concentrating thoughts already entertained by the members. To give a suitable illustration of the irregularity in question, there were several reasons for selecting the discourse of Mr. Miller, entitled " The Two Records, the Mosaic and the Geological." It had just been republished in this country; its author was widely known in both hemispheres by his interesting discoveries in the old red sandstone; and, because of his having written so as to be easily understood by persons not previously skilled in geology, his publications had been read by probably a larger number of persons than had before undertaken the perusal of treatises on the same subject. Moreover, he had written with special reference to several leading controversies which engaged the popular attention; and his works were frequently appealed to with more or less pertinency in relation to the Noachic deluge, the origin of the varieties in the animal and vegetable kingdoms, and the geographical distribution of species. He thus served as a medium of communication between the studies of scientific men, and the speculations of the general reader. Lastly, his character and motives were unimpeached; and thus the force of personal considerations was added to those of learning and judgment. I was careful, Mr. President, to announce at the outset, that what was intended in my criticism had reference to the " logic of the natural sciences;" but under the comity proper between this Academy and the cultivators of those sciences throughout the world, it certainly did not appear to me necessary to disclaim all design to charge upon any person a wilful misuse of reasoning. Nevertheless, as a manifestation of the feeling with which the essay of Mr. Miller was reviewed, I used these words, which were printed in our Proceedings: "The high esteem in which the character of Mr. Miller is deservedly held by readers in the United States, where his writings are widely circulated, and the respectful manner in which his interesting researches have occasioned his name to be mentioned by authors eminent in the department of geology, give to such of his writings as bear upon the biblical question, peculiar importance with reference to the community at large." There was, therefore, no question proposed upon matter of fact, nor any imputation upon the motives of Mr. Miller. My remarks obtained the general concurrence of the members who heard them; at whose instance, and not at my own, the minute of them made by the Secretary was published with the other proceedings of the evening.

Sharing with you, Mr. President, and our fellow members, the profound sentiment produced in this country by the melancholy scenes which closed the useful life of Mr. Miller, I am sure of your participation with me in the surprise and regret with which I have read the following paragraphs, at pages 171, 172 and 173* of "The Testimony of the Rocks." (Mr. Foulke here read the passages referred to.)

That a member of this Academy could be permitted to make, against such a man as the lamented deceased, a gratuitous charge of *intentional misrepresentation*; and that the charge could be deliberately sanctioned, and printed under your authority and that of the other distinguished gentlemen who were present at the meeting of May 9, 1854—some of whom are now here—seems so far beyond any license known to a respectable association, that I confess myself at a loss to find an acceptable explanation of the credence which has been given to the supposition. I need not say, in this Hall, that the thing is impossible. Mr. Miller is no longer among the living; the hand of death has removed restraints which might have prevented the voluntary proffer of any denial of such an imputation as is implied upon me, upon you, and upon our associates, by the paragraphs which I have read to you. I shall have your and their approval, when I give to the memory of the deceased, as a tribute of respect, the most emphatic disclaimer of any thought which could impeach the integrity of his motives in the construction of his argument; or which could attribute to him conscious neglect of the rights of others, in that most unfortunate interpretation which he has put upon the Proceedings of this body.

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* Boston Edition, 1857.

Having said thus much towards the dead, let me add a few words in the way of caution to ourselves. Each of us is engaged in some pursuit which touches adversely the opinions, the prejudices, the self-love, perhaps the religious sentiment of a portion of mankind. Even in what might appear to an unimpassioned observer the most tranquil of occupations, there arise competitions; and the very love of truth often makes us impatient disputants. We have seen that under a sudden sensibility to a logical criticism, not so phrased as expressly to forbid the meaning erroneously attributed to it, a stranger, with no cause of quarrel, has been supposed by an author of respectable fame to make an accusation of mendacity against him; and a learned body of established reputation has been believed to have promoted the publication of the charge. To a judgment thus unconsciously clouded, see how naturally all that followed became distorted. I had said that the proceeding of the author was " a fallacious use of a generalization made for a purpose, and upon a principle not properly available for the writer's argument;" and the author forgetting the distinction between a *fallacy* and a *falsehood*, and overlooking too the grammatical relation of the parts of the sentence, italicized the words "*made for a purpose*," so that his readers could not avoid the suggestion that it was the "*fallacious use*," and not the " generalization," which had been *made for a purpose*, inapplicable to his object. Nay more; such was the effect upon the author's mind, that he closed his quotation with an "&c." at the very point at which began the sentence which I have read to you, referring to the " esteem in which he was *deservedly* held in the United States"—took no notice whatever of the tenor of that sentence, but said," so far the Proceedings of the Academy," &c. It need not surprise you, sir, after such examples, to find that I am said to treat the carboniferous period as the latest of the palæozoic series. A glance at my phraseology will be sufficient to show you that the " series" referred to was one reckoned "from the carboniferous rocks downwards, (backward in order of time,)" and that the rocks in this series were selected by me to show the inconsistency of the argument with the facts; and that my choice had no connection with the limitation of the palæozoic *system*. That my use of the word *series* was not a novelty, may be easily shewn by reference to British as well as American authors.* I have no wish to multiply these observations; my peculiar personal interest in the misapprehensions of the author, ends with the explanation which has been made in relation to that which wounded his feelings; yet, in illustration of the reflection to which my last remarks have been directed, it may not be improper to mention two or three additional examples. Thus, although a member of this body, surrounded by the choice geological library through the use of which so many Americans have become known abroad for learning in natural science, it is assumed that I am ignorant of the relation of the " Permian " rocks to the Palæozoic system—a relation indicated during at least twenty years in elementary treatises. Again, although a citizen of Pennsylvania—a State one of whose most remarkable evidences of wealth is the fact that she is the holder of the great anthracite basin and of a portion of the chief bituminous measures—although a resident of Philadelphia, whose principal domestic export is coal, it is assumed that I could overlook the fact that there are vast deposits of coal in North America. It ought, perhaps, to be said in this connection, that the author has wholly misunderstood my observations with respect to the comparative quantities of vegetable product in the carboniferous period and that in which we live. Considering that we do not know the extent of the area of growth in the carboniferous period, nor the length of time consumed in forming the deposits of vegetable matter which make the coal beds; and taking into view solidity as well as size, and the multiplication of individual growths, it is certainly not going very far to say that it is not "patent to all" that the total quantity of vegetable growth upon the earth during a given space of time was greater in the carboniferous than in the present period. I made no affirmative assertion; and in the absence of conclusive proof, I have none to make now. It is enough to indicate the irrelevance of the reasoning employed by the author upon pages 174 and 175.

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* " The use of the word *series* in describing the subdivisions of the palæozoic system, is by no means an innovation, but is, on the contrary, a return to the language formerly in very common use among the members of the Geological Society, as any one may see on turning over the pages of the early volumes." *Synopsis of the Classification of the British Palæozoic Rocks. By the Rev. Adam Sedgwick, M. A., F. R. S., Woodwardian Professor and Fellow of Trinity College, Cambridge.* London, 1855.

With respect to the scientific criticism which has occasioned these remarks, it gives me no concern. It, or its equivalent, will be judged by proper persons. It has been in the hands of many whose minds have been disciplined in the best methods of inquiry; and from no quarter had I reason to suspect the existence of dissent until the appearance of the book before us. It is to be hoped that on both sides of the Atlantic there will be cultivated a mutual confidence, which shall prevent misconception of motives; and that hereafter the vigilance which is indispensable to preserve the pursuits of philosophy from unconscious bias, shall not be misconstrued as the intrusion of an unfriendly spirit. *Felix quem faciunt aliena pericula cautum.* In conclusion, I beg to renew the expression of my regret, that any accident should have made me the occasion of pain to a gentleman so deserving of our consideration and friendly esteem as was the author of "The Testimony of the Rocks." It cannot but enhance the appropriateness of such an expression at this meeting, that beside yourself and your colleague, the other Vice President, who usually preside over the deliberations of the Academy, I see here to night its venerable President, and several other learned members, whose names are familiar to cultivators of the natural sciences in Great Britain.

May 12*th.*

Vice President Bridges in the Chair.

Communications were received, for publication in the Proceedings, entitled, as follows:

Notes Explanatory of a Map and Section illustrating the Geological structure of the country bordering on the Missouri River, from the mouth of Platte River to Fort Benton, in lat. 47° 30′ N. long., 110° 30′ W., by F. V. Hayden, M. D.

On the Larva of Thyreus Abbottii, by J. P. Kirtland, M. D.

Which as usual were referred to Committees.

Mr. Harris observed, in relation to the specimens of cotton-wood and chips cut by beavers, presented this evening, that they had been obtained by him from the Missouri River, between Fort Union, at the mouth of the Yellowstone, and Fort Clark, at the Mandan Village. He added, that in returning from a trip up the Missouri to the mouth of the Yellowstone, in company with the late J. J. Audubon and party, in the month of September, 1843, our Mackinaw boat was moored for the night on the right bank of the river, under shelter of timber on the bank, which was here about twenty feet above the water at its then